Generating Diverse Code Explanations using the GPT-3 Large Language Model

Year: 2022 | *Citations: 182* | *Authors: Stephen MacNeil, Andrew Tran, Dan Mogil*

Abstract

Good explanations are essential to efficiently learning introductory programming concepts [10]. To provide high-quality explanations at scale, numerous systems automate the process by tracing the execution of code [8, 12], defining terms [9], giving hints [16], and providing error-specific feedback [10, 16]. However, these approaches often require manual effort to configure and only explain a single aspect of a given code segment. Large language models (LLMs) are also changing how students interact with code [7]. For example, Github's Copilot can generate code for programmers [4], leading researchers to raise concerns about cheating [7]. Instead, our work focuses on LLMs' potential to support learning by explaining numerous aspects of a given code snippet. This poster features a systematic analysis of the diverse natural language explanations that GPT-3 can generate automatically for a given code snippet. We present a subset of three use cases from our evolving design space of AI Explanations of Code.